Natural Capital Accounting in the Caribbean

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Introduction

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This seminar will provide participants with an overview of Natural Capital Accounting (NCA), focusing on producing and using NCA within a Caribbean SIDS context.

The session will cover:

- **concepts of NCA**
- **outline how NCA is developed**
- **demonstrate its application in the Caribbean**
- **discuss its application to decision-making**

Agenda

Welcome and introduction	10:00 – 10:05
Natural capital accounting concepts	10:05 – 10:30
Natural capital accounting in practice	10:30 – 11:00
Application of natural capital accounts	11:00 – 11:15
Q&A and close	11:15 – 11:30

Natural capital accounting concepts

Natural Capital Accounting

Natural capital accounting produces better evidence on the benefits the natural environment provides to support SIDS' economic aspirations, whilst illustrating the ability of the environment to deliver these benefits sustainably:

- inform policy making and planning
- identify opportunities for economic development
- enhance protection from natural disasters
- maintain the value provided by environmental assets to support SIDS economic and social resilience and sustainability.

Topics:

- Key concepts of Natural Capital Accounting
- Links to international initiatives

Concepts

Limitations of national economic accounting - GDP

- GDP measures transactions, but is used as a proxy for welfare
- Environmental damage (e.g. oil spill) can increase GDP
- Transactions reflect current consumption of resources, not the underlying state of natural assets
- Current economic indicators do not reflect climate change, or declines in biodiversity, fish stocks, soils, etc…

= A requirement for a better understanding of how we use natural resources to support human welfare

Wealth vs Income

Income = monetary flow

= GDP!

= Ecosystem service value

Wealth = underlying assets

= Property, knowledge

= Natural environment

Natural capital stocks

Ecological communities

Soils

Freshwaters

Land

Minerals

Atmosphere

Subsoil assets

Oceans

Ecosystem Service Flows

Inputs from other capital

Benefit flows

Food

Fibre

Energy

Fresh water

Clean air

Climate regulation

Amenity

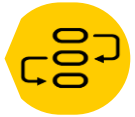
Biodiversity/ conservation

Provisioning services

Regulating services

Cultural services

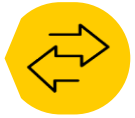
Features of natural capital approach



Focuses on **stocks** of natural capital assets (quality and quantity) as well as **flows** of benefits

Incorporates both **biotic and abiotic** natural resources

Assesses how both stocks and flows are likely to change in the **future**



Considers both **dependencies** of economic activity on natural capital and its **impacts** on natural capital

Uses **valuation** of impacts and dependencies

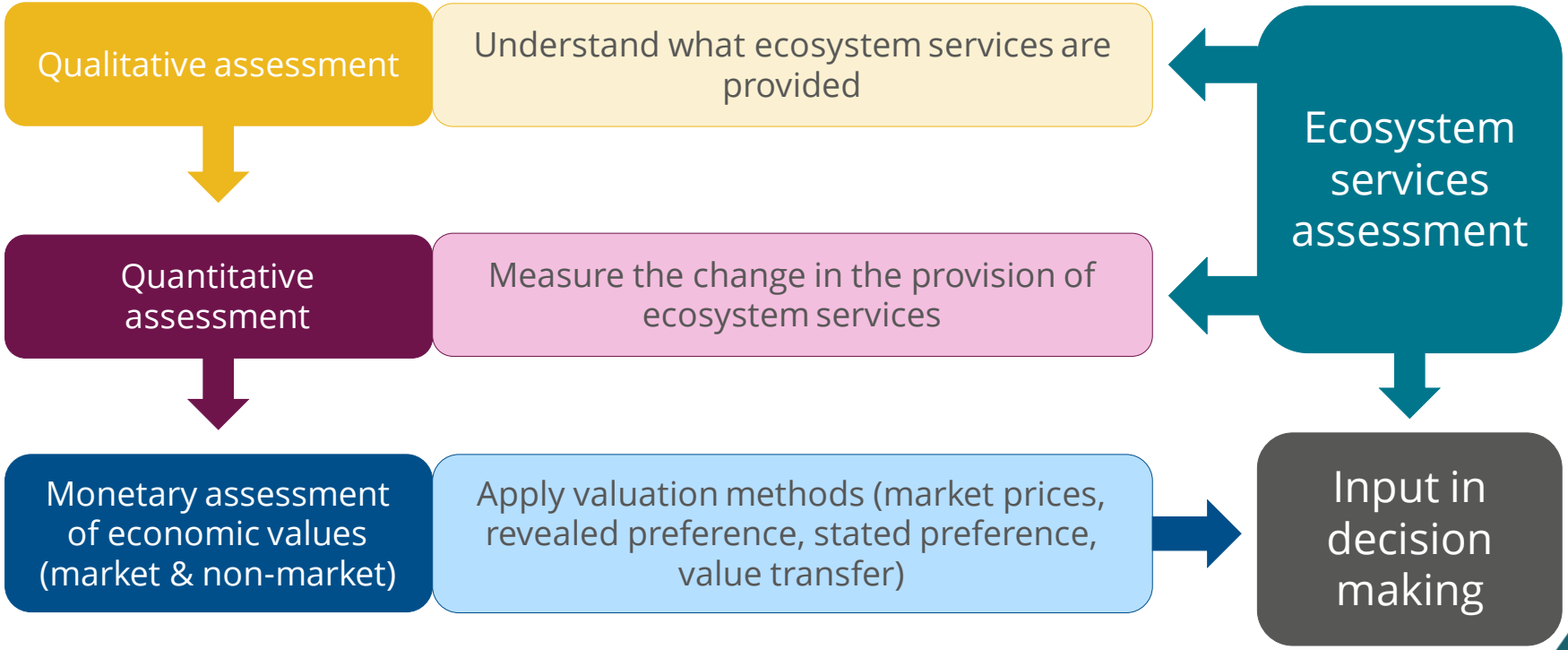
Makes the links between all of the above, to support **systems-based thinking**

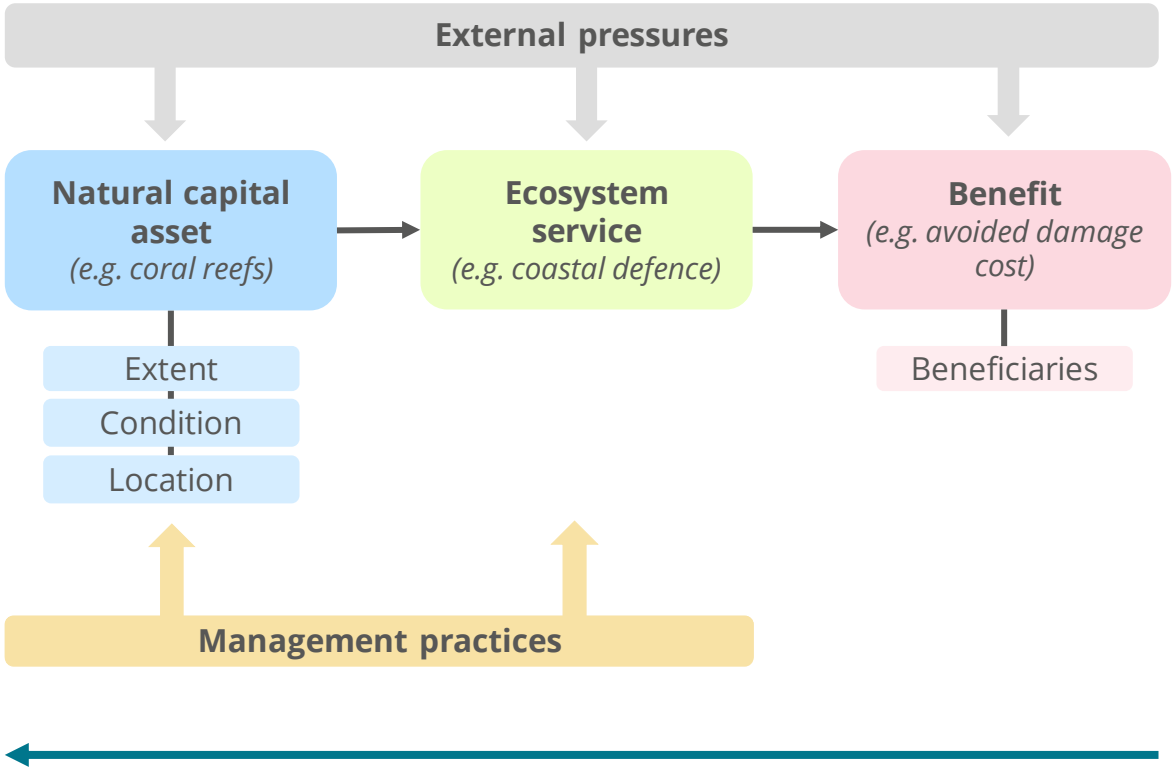
Key concepts of natural capital accounting

- Natural capital accounts are a set of interrelated component accounts that aim to answer the following key questions:

Key question	Component account	Description
What natural capital assets do we have?	Natural capital asset register	Records details of the **stock of natural capital assets** within the geographical boundary. Habitat extent (i.e. area) and condition indicators (i.e. quality)
What benefits do these assets provide	Physical flow account	Reports expected **flows of ecosystem service benefits** (i.e. quantity) that are provided by natural capital recorded in the asset register.
What is the value of these benefits	Monetary value account	Reports expected monetary value of ecosystem service benefits, both as **annual values** (e.g. baseline year) and **asset value** (sum of the expected flows of discounted values).

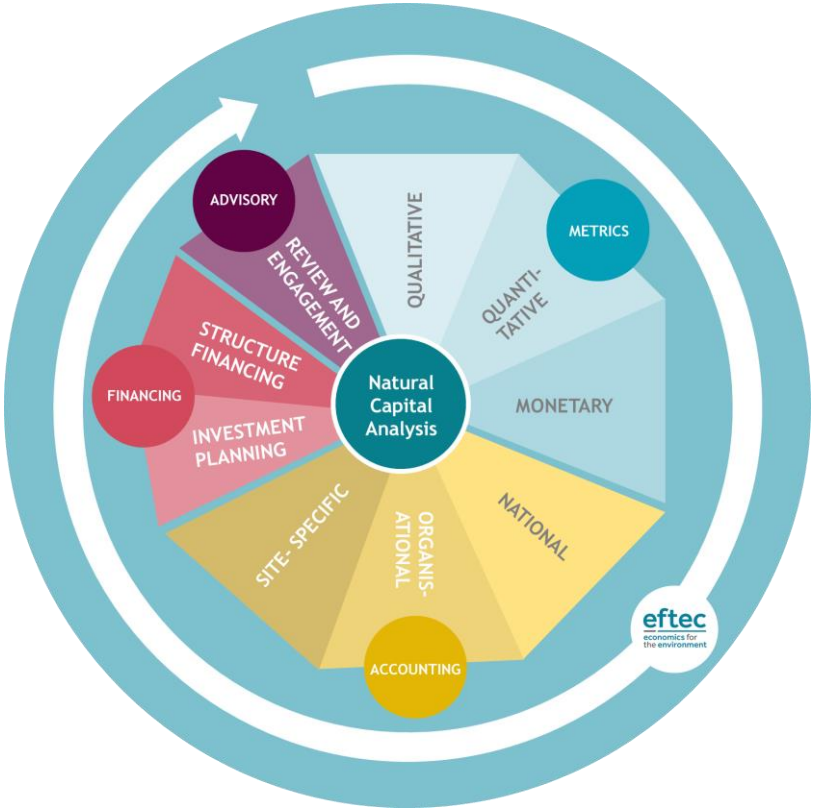
Generating economic value evidence




External pressures
Natural capital asset
(e.g. coral reefs)
Ecosystem service
(e.g. coastal defence)
Benefit
(e.g. avoided damage cost)
Extent
Condition
Location
Beneficiaries
Management practices
Dependency on management objectives

Good practice for valuation and natural capital analysis

- Makes the most of **available information**
- Measures **material** impacts and dependencies
- Speaks to **different stakeholders**
- **Transparent** methodology, assumptions, calculations
- **Comparable** across space and time
- **Auditable** by third parties



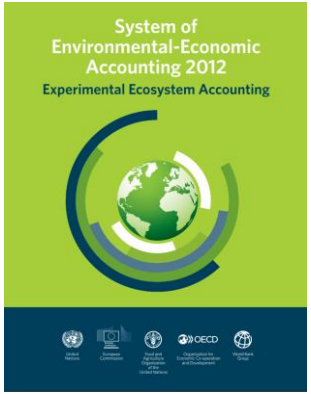
Links

Links to UN SEEA-EEA

- National accounts (e.g. GDP) do not reflect climate change, or declines in biodiversity, fish stocks, soils etc.
  - There is a need for a better understanding of how we use natural resources to support human welfare

- System of environmental and Economic Accounting (SEEA):
  - Provides a central framework for environmental accounts
  - From experiences that have been made during the last 20 years
  - Focus on the use of natural resources and emissions by industry, and also the economic transactions that are related to environmental pressure
  - Guidance on the valuation of natural resources based on market values of resulting goods and services is provided

- SEEA EEA prescribes the development of a series of connected core accounts
  - Extent and conditions of ecosystems – the size and state of ecosystems determines the flow of physical ecosystem services (supply) → Asset register
  - Supply and use of ecosystem services (biophysical and monetary)
  - Monetary ecosystem assets



Links to Sustainable Development Goals

- UN SDGs (2015) 2030 Agenda for SD and SDGs adoption → fundamental shift toward integration of a multitude policy issues into a single policy agenda

- NCA can help deliver the SDGs by making explicit the links between the economy and the environment, enabling sustainable policy decisions and actions, and monitoring progress
  - Recognised in **SDG target 15.9** – ecosystem and biodiversity values to be integrated into national and local planning, development process, poverty reduction strategies and accounts

- WAVES policy briefing highlights that NCA can:
  - Act as a framework by providing necessary data
  - Support delivery of the SDGs by ensuring that natural resources are included in planning and implementation at the national, sectoral and business levels
  - Support monitoring and reporting through SEEA, as recognised by UN Statistical Commission in 2014

- More information on these links can be found here: http://campaign.r20.constantcontact.com/render?m=1112504304143&ca=5d1dadc4-17c9-4241-a15d-3b499429eb5c

Natural capital accounting in practice

Topics

- “Caribbean OTs regional NCA programme”
- Structure of Natural Capital Accounts
- Data collection
- Training and engagement activities

Caribbean OTs Regional NCA Programme

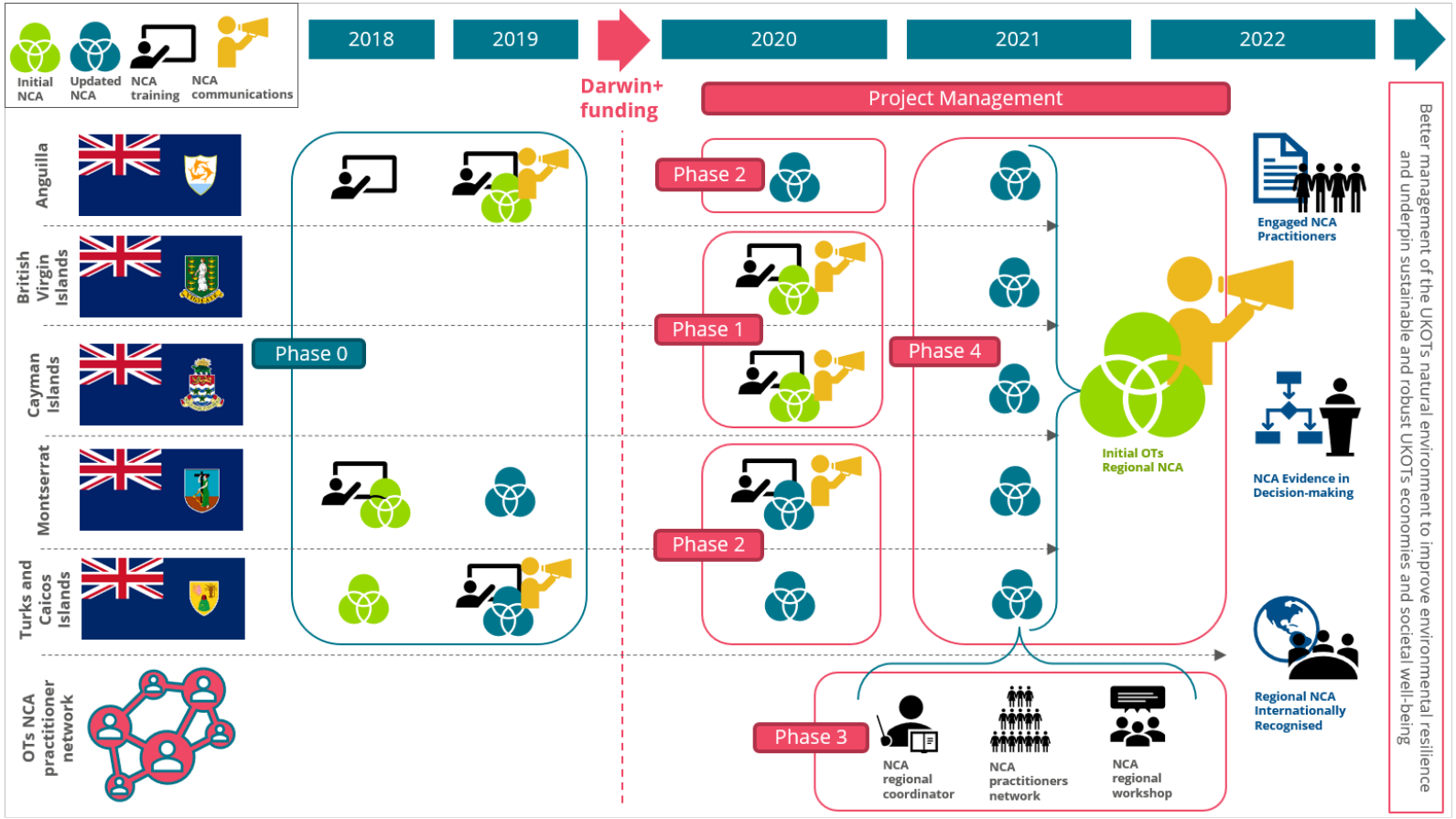
Caribbean OTs regional NCA programme

- **Context:** Livelihoods of people in the OTs is highly dependent on their natural environments.
  - Pressure to develop economically, often in ways that directly and indirectly damage the environment
  - Environment is currently undervalued in decision-making and funding allocations, damaging its capacity to provide essential ecosystem benefits (e.g. healthy fisheries, coastal protection, supporting tourism)

- **Project aim:** To establish a system of accounting for the benefits that the environment provides within five UK Caribbean OTs (Anguilla, British Virgin Islands, Cayman Islands, Montserrat and Turks and Caicos Islands).

- Funded through a Darwin Plus grant from the UK Government.

Caribbean OTs regional NCA programme



Caribbean OTs regional NCA programme

- **Project outcomes:**
  - Produce natural capital accounts in the OTs
  - Build NCA capacity and support network in the OTs
  - Provide accessible evidence on the value of the environment
  - Interpretation of the evidence to inform decision-making, policy-makers and planners

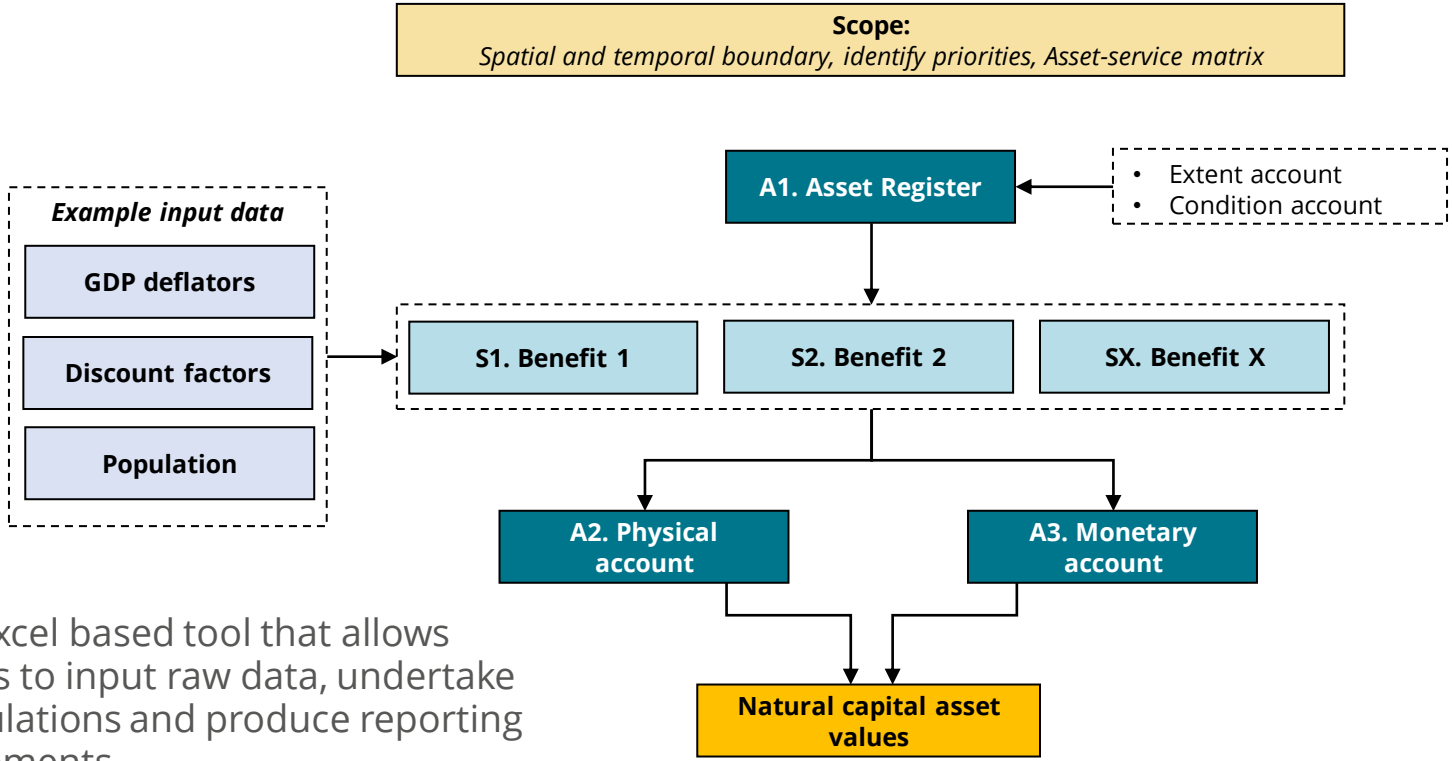
- **Regional connections:**
  - **Networking with regional practitioners**
  - **Connection with regional organsiation and initiatives**
  - **Regional NCA practitioners conference?**

Previous natural capital accounts

- Previously completed natural capital account on Anguilla:
  - Initial – 2018/19 account
- https://hub.jncc.gov.uk/assets/62e82176-5053-4733-bd05-e33b15bbf88c#ot-nca-sup-sat-19-ang-nca-jun-2019.pdf
- Other OTs:
  - Montserrat: https://hub.jncc.gov.uk/assets/0766c05e-0cfb-4510-81cd-b768701bce32
  - Turks and Caicos Islands: https://hub.jncc.gov.uk/assets/0766c05e-0cfb-4510-81cd-b768701bce32#ot-nca-sup-cbn-21-TCI-nca-jun-2019.pdf

Structure of NCA

Natural capital accounting workbook



- An excel based tool that allows users to input raw data, undertake calculations and produce reporting statements

Extent and condition accounts

- Example from Anguilla NCA (2018)
- Habitat extent data ✓
- Condition data
  - Carbon storage in vegetation ✓
  - Species count ✓
  - Protected areas ✘
  - Level of access ✘

Tgpology	Super Class	Class	Extent (m²)
Habitat	Bare ground	Bare Ground	3,190,116
	Beach	Beach classification	1,522,543
	Buildings	Buildings	1,919,022
	Cultivated land	Agriculture	722,087
		Fallow	2,206,676
		Total	**2,928,763**
	Developed land	Airport	443,222
	Disturbed area	Disturbed	2,451,883
		Mineral Disturbed	773,893
		Total	**3,225,776**
	Dry forest	Dry Forest	478
		Mineral Dry Forest	17,642
		Total	**18,120**
	Ironshore	Ironshore classification	2,201,295
	Mangrove	Mangrove	1,194,680
	Open water	Ponds classification	2,973,613
	Recreation	Recreation	64,499
		Golf course	332,619
		Total	**397,119**
	Roads	Road	2,577,344
	Scrub	Mineral Scrub	3,533,024
		Mineral Scrub Scattered	527,738
		Mineral Scrub w Thicket Chars	89,677
		Scrub Dune	832,704
		Scrub Limestone	34,769,463
		Scrub Scattered	3,094,374
		Scrub Scattered Cacti	1,412,629
		Scrub Scattered Limestone Pment	2,636,303
		Scrub w Thicket Chars	1,116,069
		Total	**48,011,980**
	Thicket	Mineral Thicket	1,014,559
		Mineral Thicket w Dry Forest Char	36,770
		Thicket Dry Forest Characteristics	195,388
		Thicket Dune	40,770
		Thicket Limestone	6,659,350
		Total	**7,946,838**
	Seagrass*	**Seagrass**	**34,000,000**
	Unknown	(blank)	474,560
	TOTAL		112,551,032

✓ - included in previous accounts

✘ - not included in previous accounts

Benefits (physical flow and monetary value) account

- 7 benefits included in Anguilla 2018 account:
  - Fisheries
  - Agriculture
  - Tourism
  - Local cultural services
  - Heritage (salt pond)
  - Carbon sequestration
  - Coastal hazard protection (hotel closures; infrastructure damage)
- What benefits are priority to include in other national accounts?

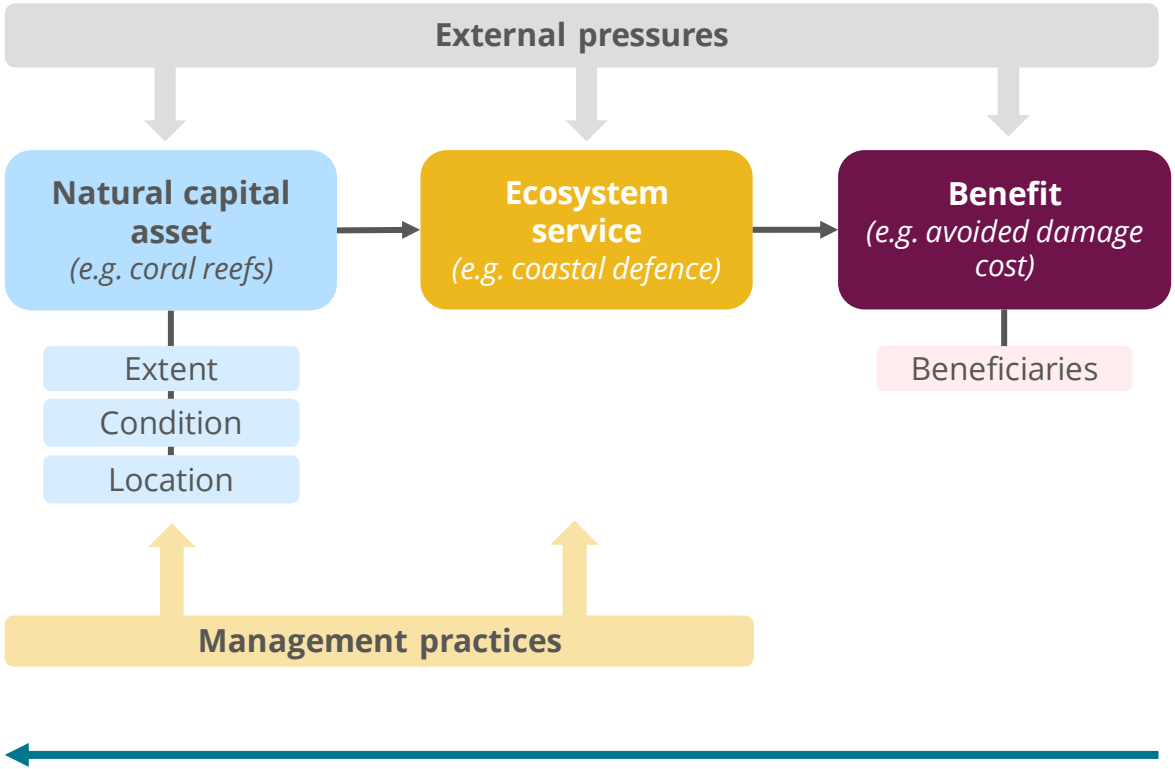
Natural capital account overview

Summary of key data. It is populated from the supporting schedules S2 and S3.

Annual Overview	Physical		Monetary		Present Value
	Measure/ year	Units	Baseline (2017/18)	Uncertainty & valuation method	25 years
At May 2019	Annual Value		Annual Value (EC$)		PV (EC$)
Benefits					
Fisheries	2,418,933	lb caught per year	39,342,000	Average price received for total fish caught each year	671,110,000
Agriculture	85,824	lb of agricultural yields each year	444,000	Average price received for total agricultural yield each year	7,573,000
Tourism	602,575	Total visitor nights	194,359,000	Total visitor expenditure attributed to natural capital	3,315,441,000
Local cultural services					
	867	Anguilla National Trust tour attendees	89,000	Value of Anguilla National Trust tours	1,523,000
	15,045	Local Anguilla resident population	2,829,000	Value of cultural services to local population	50,136,000
Heritage salt pond	575	Number of people living within 200m of heritage ponds			
Carbon sequestration	7,538	Tonnes of carbon equivalent sequestered each year	834,000	Value of carbon sequestered	19,648,000
Coastal hazard protection					
Hotel closures	1,124	Number of avoided lost room days	556,000	Avoided hotel revenue lost in a year due to water damage	9,476,000
			56,000	Avoided accommodation tax revenue lost due to water damage	948,000
Infrastructure damage	96,298	Square feet avoided damage in storm surge zones	9,806,000	Total avoided infrastructure damage cost	167,276,000
Terrestrial hazard protection					
Total Annual Value			248,170,000		4,240,660,000

Level of Uncertain	Description of Uncertainty
High	Evidence is partial and significant assumptions are made that require further research.
Moderate	Based on assumptions grounded in science and using published data but with some uncertainty regarding the combination of assumptions.
Low	Evidence is peer reviewed or based on published gudiance.

Data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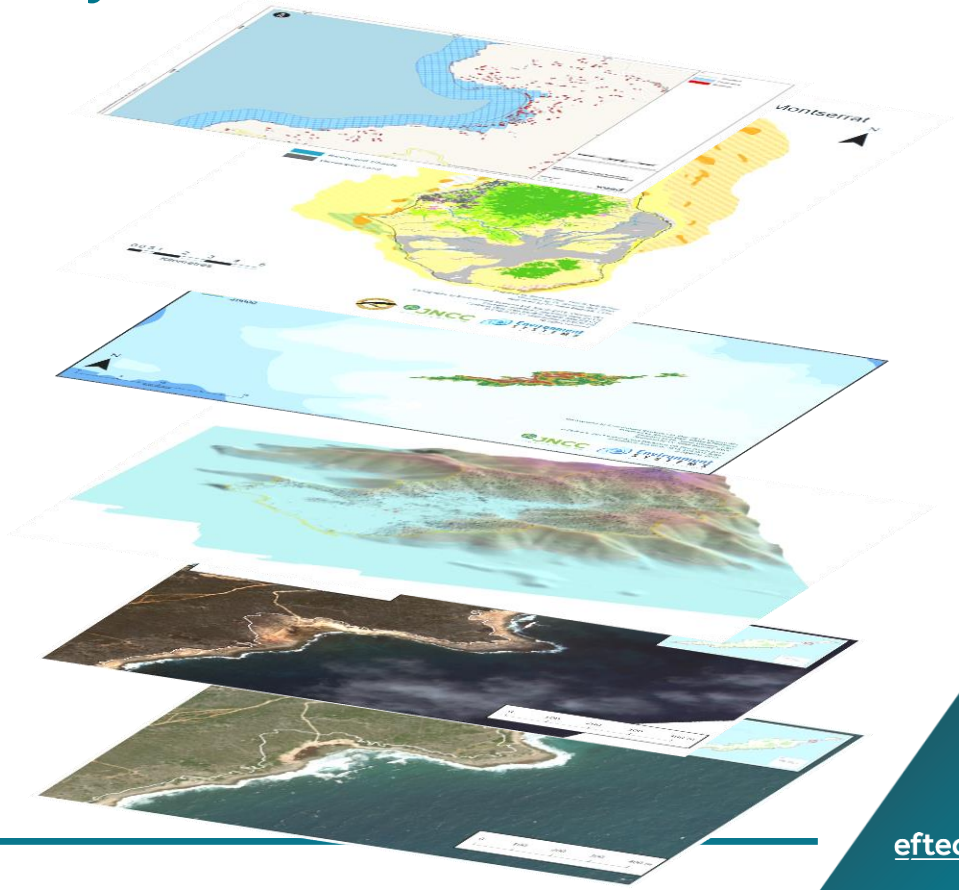
Dependency on management objectives

Use of Geographic Information Systems (GIS)

- Spatial data and use of GIS allows us to link natural capital assets with location
- GIS and earth observation data can tell us:
  - Where
  - How much (extent)
  - Sometimes state or condition of asset
  - Connectivity i.e. how close people & buildings are to assets
  - Combine different data types
  - Analyse ecosystem services
  - So much more!



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Fisheries

Benefit

Physical data

Total volume of fish landings

- Fish catch data*(DoE, 2017)*
- Proportion of fish by use type *(Ramdeen et al., 2014)*

Monetary data

Value of fish

- Average price of fish by weight *(DoE, 2017)*

Agriculture

Benefit

Physical data

Total volume of agricultural output

- Agricultural production by output type *(Department of Agriculture, Anguilla, 2017)*

Monetary data

Value of agriculture

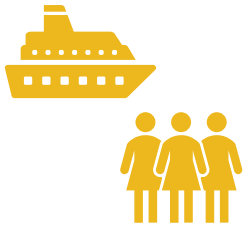
- Market price in EC$/lb by output type *(Department of Agriculture, Anguilla, 2017)*

Tourism

Benefit

Total number of visits

Physical data



- From *Anguilla Department of Environment (2018)*
  - Tourist Arrivals by quarter
  - Excursionist Arrivals by quarter
  - Cruise Passenger Arrivals by quarter
  - Tourist Arrivals by Length of Stay by quarter
  - Activities participated in by travellers while visiting Anguilla

Value of tourist expenditure

Monetary data

- Estimated visitor expenditure by quarter *(Anguilla, Department of Environment, 2018)*
- Estimated visitor expenditure by type of visit *(Anguilla, Department of Environment, 2018)*

Local Cultural services

Benefit

Total number of local recreation visits

Physical data

- ANT Heritage Site Tour (*National Trust from Anguilla Department of Environment)*
- Anguilla population 2017-2050 *(UN data)*

Value of local recreation expenditure

Monetary data

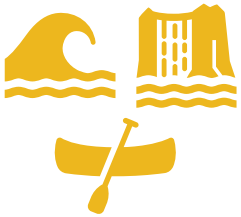
- ANT Heritage Tour – price for adult and child *(from Anguilla National Trust, 2018)*
- *ANT Dates with Nature price (from Anguilla National Trust, 2018)*
- *WTP for cultural services (from multiple studies referenced in Ghermendi et al., 2009)*

Coastal Hazard Defence

Benefit

Physical data

Coastal hazard defence value



- *from Anguilla Department of Environment, 2018)*
  - Number of hotels identified as closed (post-2017 season)
  - Total number of months hotels closed (post-2017 season)
- *Number of rooms in each hotel (from Anguilla Hotel and Tourism Association)*

Monetary data

Value of damages

- Revenue per available room (EC$) in the Caribbean region (from STR: Caribbean 2018 hotel performance)
- Anguilla accommodation tax rate (from Government of Anguilla, 2019)
- Employment in Travel and Tourism in Anguilla (from World Travel & Tourism Council, 2018)
- UK employment and FTEs in tourism industries (ONS, 2016)

Carbon sequestration

Benefit

Total carbon sequestered

Physical data

- Carbon sequestered from vegetation *(Academic literature):*
  - Forests
  - Wet Woodland
  - Seagrass

Value of carbon

Monetary data

- Non-traded social cost of carbon *(BEIS)*

Heritage Salt Pond

Benefit

Heritage value

Physical data

- Household size *(from Ministry of Finance, Economic Development Investment, Commerce and Tourism, Government of Anguilla, 2015*
- Heritage value of *(from Viridian Logic)*:
  - Long pond
  - Road Salt Pond
  - Rendezvous Salt pond
  - Meads Bay Pond
  - West End Pond

Heritage value

Monetary data

Capacity building

Training

- Capacity building is a priority
  - The aim is that the accounts should be fully owned and operated by the local Government (Environment / National Statistics Office)

- Training is provided
  - To government practitioners to collect data and produce the environmental statistics
  - To decision makers on interpretational and use of the environmental statistics

- Format is flexible
  - From a few hours to multi-day sessions
  - In person and virtual

Engagement

- Engagement materials for wider circulation
  - e.g. briefing notes
- Stakeholder engagement
  - e.g. engaging with insurance industry; tourism sector
- Press briefings and policy briefings
  - Running seminars/webinars for NCA 101
  - Press conferences
- Public engagement
  - Social media

Application of natural capital accounting

Topics

- Application to policy and planning – where does it fit in?
- Application to Tourism and a Green Recovery
- Application to the Sustainable Development Goals
- Current activities

Policy and planning

Application to policy and planning

- NCA process helps to:
  - Collect data for environmental impact assessment(s)
  - Organise data that demonstrate dependency on the natural environment of various sectors and economic/tax base (e.g. tourism, coastal protection)

- NCA outputs help to:
  - Measure and monitor improvement in the environment – “public money for public goods”
  - Provide evidence base for planning and policy objectives
  - Make investment case for protection and enhancement of habitats (e.g. coral reefs)
  - Inform if policy and management decisions are sufficient to maintain assets and sustain benefits over time (sustainability)
  - Examine intergeneration values (i.e. values to future generations)
  - Interpretation - can be used for strategy, investment, engagement and decision-making

Application to policy and planning

- NCA does have limitations…
  - Accounting frameworks will never capture all values for the natural environment (i.e. partial measure of value)
  - Some loss of precisions in value estimates may be acceptable, for the sake of greater inclusivity
  - Monetary valuation cannot fully address sustainability concerns
  - Monetary accounts depends upon and must be developed in parallel with physical accounts
  - Can contribute to OT wide policy, but not directly to site-specific decisions without further modification/analysis
  - Difficult to reflect non-utilitarian values (e.g. protection of endangered species)
- As long as these limitations are understood, the NCA process is a very useful tool
  - Expands the evidence base, organising, building on and complementing existing evidence
  - Supports other activities to provide a more complete picture of the value of natural assets

NCA guidance: Interpretation, distribution and decision making

‘Who benefits’ from ecosystem services or investment plans needs to be clear and transparent, as well as impacts on people who may not be the main beneficiaries.

- Engaging different stakeholders so that the distribution of costs and benefits is fully understood and included in the discussion.

- Understanding who may be excluded from both the process and any outcome of environmental decisions (as a result of inequality and their ability to access, engage or adapt) is as important as understanding who benefits, but this reality remains invisible unless it is explicitly investigated.

NCA guidance: Interpretation, distribution and decision making

When we account for benefits, we need to know:

- **what the benefits are**
- **where the value (in all its varied forms) derives from it,**
- **to whom that value flows.**

- What natural capital assets are present? Who controls or has ownership over them? Who can access these natural capital assets? And at whose expense?
- What benefits do these assets provide? For whom? And at whose expense?
- What is the value of these benefits? And how are they distributed differentially across the population?

Image from: https://caymanresident.com/health/health-insurance

A Green recovery and the tourism sector

Crises and a Green Recovery?

- Crises can create opportunities
- While COVID-19 has created a health and economic crisis, in forcing a shift from the status quo it has also opened the possibility of transformative change in society
- Any such shift should be based on sound evidence and an understanding of the economic and social consequences of policy and planning decisions which impact on the environment and its ability to sustainably benefit people everywhere
- NCA is a systematic means to measure the benefits that the environment provides, and to understand their value in economic terms
- The evidence provided in NCA underpins both how the environment supports the economy, and how dependent society is on the environment
- Such evidence can be used to make an economic case for the benefits of activities which both maintain and enhance the value that the environment is able to provide

Government reaction

- Many Governments are adjusting economic policy to support economic activity in the short term
- This policy is funded by a major increase in Government borrowing, this will be repaid over a long period of time, so is effectively borrowing from future generations
- The natural environment can play a positive role in these policy changes, including through a ‘green recovery’
- Natural environment objectives and spending are a suitable use of resources for both the short-term and long-term objectives

Investing in Natural Capital

- Has a higher proportion of labour inputs than other capital, higher employment impact / £
- Lower reliance on imports of (skills or materials) and so a higher domestic circulation of £
- Can benefit all parts of the economy and society
- Large natural capital investments have lower capital and maintenance costs than other capital
- Natural capital assets do not depreciate if maintained – investment can secure renewable benefits
- Climate change adaptation needs investment to increase resilience, benefits for future generations
- CONCLUSION: An effective use of current Government investment is to deliver natural capital objectives and climate policy targets - they will be significantly more expensive to achieve in future.

Tourism's role in economic recovery

Anguilla, a Caribbean island, receives annual natural capital benefits of US$72.0 million from tourism and US$3.6 million from coastal protection.

Tourism's role in economic recovery

- Of particular importance for the Caribbean SIDS is the tourism sector
  - The dominant economic sector underpinning much of the wider economy in many SIDS
- Due to this importance, there may be a tendency towards prioritising short-term recovery by encouraging a tourism recovery at any cost
- This would be a mistake if the result is to the detriment of the SIDS natural environment on which the tourism sector is dependent
  - The natural environment both attracts tourists and provides protection for tourism infrastructure from extreme weather events
  - any short term economic boost would be eclipsed by medium to long term decline in both the environment and the economic value on which it depends
- Economic evidence generated through NCA could be used to make a case for investment in conservation activities for economically and environmentally sustainable tourism
  - build resilience into SIDS' natural environment
  - sustainably provide value to ensure the long-term viability of their economies (notably the tourism sector)
  - support a broader Green Recovery

SDGs

NCA to support delivery of the SDGs

- The flow of benefits from ecosystems are not evenly distributed through the population due to structural inequalities, which also manifests spatially and regionally.
- As a conceptual framework, NCA can be applied to consider gender and other interrelated social inequalities
  - in particular NCA can be used to help deliver on the UN Sustainable Development Goals (SDGs)
- There are several key SDGs about social and environmental outcomes that could be supported by NCA, including SDG 1: No poverty, SDG 5: Gender equality, SDG 10: reduced inequalities, and SDG 13: Climate action.
- Environmental statistics produced within NCA can also be applied as indicators for monitoring and evaluation of progress towards the achievement of targets

Environmental goals

Social goals

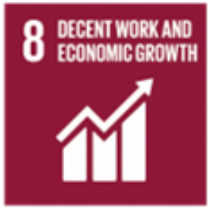
NCA evidence can support delivery of the SDGs:

What is the relationship between socioeconomic status and the benefit flows of natural capital assets?

NCA evidence can support delivery of the SDGs:

What are the gender differences in access to / benefits from natural capital assets?

NCA evidence can support delivery of the SDGs:



How do changes in the natural capital stock and benefit flows impact different sectors of the economy?

NCA evidence can support delivery of the SDGs:

How can management of the natural capital asset be used to direct the benefit flows so they reduce inequality?

NCA evidence can support delivery of the SDGs:

How are the benefits of clean water distributed?

NCA evidence can support delivery of the SDGs:

Climate change impacts and mitigation strategies are not evenly distributed among the entire population.

NCA evidence can support delivery of the SDGs:

Who currently benefits from the way the fishery is managed and would improvements in the health of fish stocks benefits larger companies or local / artisanal fishers?

NCA evidence can support delivery of the SDGs:

Agriculture impacts on people's health and the availability and type of local food (nutritional value and health); there are also distribution issues around who benefits from healthy food (e.g. locals vs. export, household vs. hotels).

Current activities

OTs NCA programme timeline

- 2019/20 NCA and final report to be produced by Q1 2021
- Training Q1/Q2 of 2021
- 2020/21 NCA to be developed on-island (with eftec support) by end of 2021
- Regional NCA (i.e. consolidate accounts across UK OTs in study programme) Q1 of 2020
- Regional workshop Q1 of 2022
- Ongoing – Outreach and networking with other regional SIDS and international organisations

Natural Capital Accounts in the Caribbean

- Choose priorities – What do you need? What is useful to you?
- How will this help you? – post-Covid recovery, tourism industry, stimulate/encourage sustainability
- How they help you meet your objectives, what can be demonstrated with the evidence they provide
- What benefit are they to policy-makers and how can they support decisions
- Link to other national and international initiatives
- Move to local ownership and management of NCA and engage all stakeholders
- Networking and engagement across Caribbean region (practitioners network, regional NCA conference)

Q&A

Thank you

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